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Remarks

Favorable reconsideration and reexamination of this application are respectfully requested.

Claims 1-2, 6 and 9 have been amended editorially. Claims 4 and 5 have been amended as supported, for example, by the printed publication of the application at paragraphs [0034-0035]. Claim 5 has been amended to include the limitations of claim 4.

Claim Rejections – 35 USC § 103

Claims 4-10 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (U.S. 5,330,835) in view of Kamaguchi et al. (WO 03/043609). Applicants respectfully traverse this rejection

Claim 4 is directed to a process for producing a heat resistant capsule, and requires simultaneously extruding a capsule filler solution through the first nozzle, a capsule covering film solution containing curdlan, through the second nozzle, and an oil solution through the third nozzle to form a composite jet, and releasing the composite jet into a heated oil solution. The temperature of the oil solution extruded through the third nozzle is lower than that of the heated oil solution, the oil solution has a temperature of 20 to 65 °C and the heated oil solution has a temperature of 80 °C or more. A benefit of using curdlan is that curdlan shows two physical phenomena, one known as “thermal reversible low set gel”, which occurs at temperatures below 80 °C, and one known as “thermal irreversible high set gel”, which occurs at temperatures of 80 °C or higher. Therefore, in the process of claim 4, oil from the third nozzle is at a temperature of 20 to 65 °C and thus provides conditions for forming thermal reversible low set gel, as the temperature is less than 80 °C. If the curdlan contacts immediately with oil more than 80 °C, the curdlan would cure at the position of the third nozzle to plug the nozzle, would be in the form of a high set gel and would not flow again (para. [0019]). The curdlan, at the third nozzle, becomes a low set gel and after parting from the third nozzle and dispersion of the oil solution of the third nozzle into the surrounding heated oil solution, is exposed to

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the heated oil solution of more than 80 °C which cures to a high set gel condition (para. [0020]).

Kikuchi discloses a seamless capsule which comprises a hydrophilic substance and a film for coating the hydrophilic substance (see Abstract and col. 1, lines 53-55). First, and as noted in the rejection, Kikuchi does not disclose the use of curdlan for the shell composition of the seamless capsule. Second, Kikuchi further discloses that the seamless capsule is produced by three nozzles, using the third or outermost nozzle for shell composition. And, if Kikuchi contained curdlan and extruded a shell composition containing curdlan from the outermost nozzle into a heated oil solution as required in claim 4, the shell composition would make immediate contact with the oil solution of 80 °C or higher, thereby forming a high set gel and plugging the nozzle. Third, Kikuchi discloses injecting the jet into a vegetable oil bath of 12 °C (col. 4, lines 61-62), which is a much lower temperature than the 80 °C required for the heated oil solution in claim 4. Kikuchi does not meet the limitations of the claims.

Kamaguchi disclose a non-gelatinous capsule which contains a gelling agent. The gelling agent can be curdlan (col. 4, line 17). The gelling agent is contained in an amount of 0.5 to 30% by weight, preferably 1 to 15% by weight, based on total weight of the solid content in the capsule shell composition (col. 4, lines 29-31). Kamaguchi discloses a vegetable oil bath at a temperature of not more than 20 °C. Kamaguchi does not disclose oil of more than 80 °C required in the heated oil solution in claim 4. Therefore, even if the features of Kamaguchi are combined with the features of Kikuchi, the deficiencies of Kikuchi are not remedied and the features of the claims are not met. The rejection of this claim should be withdrawn.

Claims 6-8 are allowable at least by virtue of their dependence on independent claim 4 and the rejection these claims should be withdrawn. Applicants do not concede the correctness of the rejection.

Claim 5 is directed to a process for producing a heat resistant capsule, and requires simultaneously extruding a capsule filler solution through the first nozzle, a liquid substance for isolating the capsule filler solution and a capsule covering film through the second nozzle, a capsule covering film solution through the third nozzle, and an oil solution through the fourth nozzle to form a composite jet, and releasing the composite

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jet into a heated oil solution. The capsule covering film solution contains curdlan, and a temperature of the oil solution which is extruded through the fourth nozzle is lower than that of the heated oil solution. The oil solution has a temperature of 20 to 65 °C and the heated oil solution has a temperature of 80 °C or more.

Kikuchi discloses at least three nozzles, an outermost nozzle, an innermost nozzle, and at least one intermediate nozzle but does not specifically disclose more than three nozzles. As discussed above, Kikuchi does not disclose the inclusion of curdlan in the covering film solution or the heated oil solution with a temperature of 80 °C or more. Therefore, Kikuchi does not meet the features of claim 5.

As discussed above, Kamaguchi does not meet the features of claim 5. Kamaguchi does not disclose more than three nozzles nor does Kamaguchi disclose the heated oil solution of more than 80 °C required by claim 5. Therefore, even if the features of Kamaguchi are combined with the features of Kikuchi, the deficiencies of Kikuchi are not remedied and the features of the claims are not met. The rejection of this claim should be withdrawn.

Claims 9-10 are allowable at least by virtue of their dependence on independent claim 5 and the rejection these claims should be withdrawn. Applicants do not concede the correctness of the rejection.

Claims 1, 2, 4 and 5 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kikuchi et al. (U.S. 5,330,835) in view of Yamamoto et al. (U.S. 5,431,917).

Claims 1 and 2 are directed to a heat resistant capsule where curdlan is used as a capsule covering film matrix of the capsule covering film and contained at an amount of 80% by weight or more relative to a total weight of the capsule covering film matrix. A benefit of this is that the curdlan provides the desired heat resistance and physical strength (para. [0023]).

As discussed above, Kikuchi does not meet the features of the claims. Specifically, Kikuchi does not disclose the inclusion of curdlan in the covering film solution.

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Yamamoto discloses a hard capsule for pharmaceutical drugs which contains a gelatinizing agent and the gelatinizing agent can be curdlan. Yamamoto further discloses that the gelatinizing agent may be contained in ranges of 0.1 to 0.5% by weight (col. 3, lines 29-32). Yamamoto claims producing a hard capsule wherein 0.15 to 0.3 parts by weight of the gelatinizing agent is used (Claim 9, col. 8, lines 28-30). Therefore, Yamamoto does not disclose, or even suggest, that curdlan be used in an amount of at least 80% by weight and actually teaches away from it (col. 3, lines 48-57). Applicants respectfully request the rejection be withdrawn for at least the foregoing reasons.

Claims 4 and 5 are directed to a process for producing a heat resistant capsule where the capsule covering film solution contains curdlan, and a temperature of the oil solution which is extruded through the third nozzle or fourth nozzle, respectively, is lower than that of the heated oil solution, the oil solution has a temperature of 20 to 65 °C and the heated oil solution has a temperature of 80 °C or more. Therefore, the capsule first contacts with an oil solution having a temperature of 20 to 65 °C forming a low set gel, and then contacts a heated oil solution having a temperature of 80 °C or more forming a high set gel.

As discussed above, Kikuchi does not meet the features of claims 4 or 5. Specifically, Kikuchi does not disclose the inclusion of curdlan in the covering film solution or the heated oil solution with a temperature of 80 °C or more.

Yamamoto discloses immersing a holding pin into an aqueous solution of the capsule base of 48 to 55 °C and subjecting the aqueous solution to gelation at a temperature of 22.5 to 25.5 °C (claim 1, col. 7, lines 24-31). Therefore, Yamamoto does not disclose, or even suggest, that the capsule base be immersed in an oil solution with a temperature of 20 to 65 °C or in a heated oil solution with a temperature of 80 °C or more. The claims are not obvious from Yamamoto or Kikuchi or their combination, and as such would not have been obvious to one skilled in the art. Applicants respectfully request the rejection be withdrawn for at least the foregoing reasons.

The rejection contends that the limitation of a fourth nozzle in claim 5 is made obvious by the teachings of Kikuchi. Applicants respectfully disagree. In any event, since Kikuchi does not disclose the inclusion of curdlan in the covering film solution or

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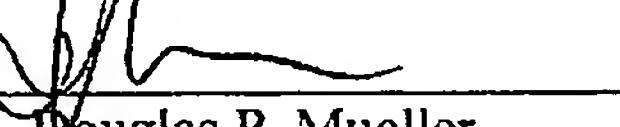
the heated oil solution with a temperature of 80 °C or more, all limitations of claim 5 are not met and the rejection should be withdrawn.

Favorable reconsideration and withdrawal of the rejection are respectfully requested.

In view of the above amendments and remarks, Applicants respectfully request favorable reconsideration of this application in the form of a Notice of Allowance. If any questions arise regarding this communication, the Examiner is invited to contact Applicants' representative listed below.

Respectfully submitted,

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